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## Problem Formulation

THE TIME DEMANDS OF INSTRUCTION, INSERVICE TRAINING, AND program improvement leave little time for the reflection necessary to develop a truly meaningful research question. Yet it is essential that collaborative action researchers have sufficient time to accomplish this crucial step. Our experience has shown that teachers who rush to complete the problem formulation stage are more likely to flounder in their later efforts, whereas teachers who take time to reflect on and define their problem are more likely to pursue questions yielding meaningful results.

In this chapter, I describe a series of techniques that have been used successfully to help beginning action researchers sharpen their focus on a research topic of significant concern to them. It is not important for teachers to come to this process with a problem in mind. The only prerequisite for participating in collaborative action research is a sincere desire to work with colleagues to improve teaching and learning.

### Reflective Interviewing

The technique of reflective interviewing requires about an hour of uninterrupted time. It is often used in departmental or grade-level meetings or during scheduled faculty meetings. After a brief introduction, each participant is asked to choose a partner who will assist her in talking about an issue that meets the following guidelines:

- The issue involves teaching and learning.
- The issue is something I can influence.
- The issue is something I'm deeply concerned about.

One partner interviews the other for twenty to thirty minutes, then the leader of the meeting calls time and the partners reverse roles. It is important that everyone be instructed that they are conducting interviews, not engaging in discussions. The key distinction is that in an interview, the person being interviewed has an opportunity to fully and deeply explore feelings and ideas on an issue of personal concern. The interviewer assists by asking clarifying questions and providing needed probes to get over hurdles. Interviewers must be careful not to take over or interfere in the respondent's personal reflection.

Most teachers are natural interviewers who rarely need much training on how to be an effective interviewer and active listener. Some guidelines for interviewers may be useful, however. Here are a few that we have used in our training programs:

1. Make the interview comfortable but challenging.
2. Keep it challenging but not threatening.
3. Try to elicit deep responses.
4. Try to elicit broad responses.
5. Keep the interview somewhat structured, but allow for flexibility and spontaneity.
6. Consider the rights and feelings of the respondent.

The purpose of the reflective interview is to enable teachers to get in touch with those core issues of practice that matter the most to them. Surfacing personal concerns early in the process is important because today's busy teachers are disinclined to invest even small amounts of time and energy on projects or inquiries that seem tangential to their core concerns. Another and perhaps equally important reason for conducting the reflective interview is to emphasize up front that it is the "actor," the teacher, who is driving the collaborative action research process. Even in the best of schools, there is sometimes a suspicion that school improvement initiatives are really elaborate plans drawn up by supervisors to involve the teaching staff in an administrative agenda. Placing teachers' instructional concerns right up front will clearly establish that the collaborative action research process is for the teachers' benefit.

## Analytic Discourse

This second technique, which is similar to a group interview, is to be used after the reflective interview. It also requires an uninterrupted period of at least one hour. Engaging in analytic discourse helps teachers more deeply explore their current understanding of the phenomena under discussion. This technique may seem superfluous at first, but once teachers become familiar with it, they rarely abandon it. Beyond its utility in helping teachers more clearly define their issues prior to conducting collaborative action research, analytic discourse can also be institutionalized into *any* work group to enhance collegiality.

The first step in preparing for analytic discourse is to have each action research team sit in a circle and briefly (two or three minutes each) share the issues that surfaced in the reflective interviews. This step enhances communication and allows the team members to see how their personal concerns mesh with the issues troubling their colleagues. If one particular issue emerges as important to most participants, which often happens, then that issue is the logical one to focus on in analytic discourse.

Once all the issues are on the table, each team needs to find a volunteer who is willing to be the subject of a group interview. Participants will later find this role to be a rewarding one, but at first some people may find it to be quite an intimidating prospect. For this reason, no one should be forced into playing the interviewee role.

Once a volunteer has been secured, the team sits in a comfortable arrangement (usually a horseshoe format) to conduct the group interview. Before getting started, the leader explains the purpose of the activity:

Our purpose is to help Joan come to a full understanding of her knowledge about an issue that is troubling her. Our analytic discourse will be considered complete when Joan is able to say, "That's it, I've fully explained to you what I understand about this issue and all of its parts," and when each of you is able to accurately paraphrase Joan's perspective on this problem.

The leader also tells the team that for analytic discourse to be effective, they *must* adhere to a strict set of rules:

- Interviewers can only *ask* questions.
- Interviewers can make *no* critical comments.
- Interviewers can offer *no* solutions.

After providing forty-five to sixty minutes for the interview, the leader asks the team to discuss their reactions to the activity. Typically, interviewees would be asked:

- How did it feel to be interviewed?
- How did it feel to have the undivided attention of a group of colleagues on a topic you're concerned about?

And interviewers would be asked:

- What was it like to be an interviewer?
- What was it like to restrain yourself from intruding into the discussion and instead try to understand a colleague's issue in all of its complexity?

During this discussion, participants often say that analytic discourse was both a new and invigorating experience for them. It is wonderful that most participants find the experience to be stimulating, but it is disappointing, too, for it indicates that this kind of collegial interaction is rare. Consider for a moment how powerful it would be for teachers to regularly exchange ideas this way at faculty meetings, just as professionals in law offices, architectural firms, and advertising agencies do in their daily or weekly meetings.

Completing an analytic discourse allows the action research team to find out whether its members share an interest in a general topic. If they do, there may be no further need to conduct another analytic discourse—at least not for purposes of problem identification. If the interests of the team members seem to be divergent, however, everyone should be given an opportunity to participate in the deep reflection that this process provides.

Having now spent several hours verbally reflecting on issues of deep professional concern, the action research teams will be getting a clear picture of their problem areas, at least as far as they currently understand them.

Infrequently, two things happen simultaneously at this point. First, team members begin to develop a precise description of the current situation. For example, they might agree that:

- Students are experiencing difficulties in recalling main ideas from their reading, or
- Teachers are seeing a decline in self-esteem as students move up the grades, or
- Students are failing to complete their assignments successfully.

It is also common for action researchers to have already begun to develop some ideas for attacking the identified problem. This is one of the glorious, albeit untidy, differences between action research and traditional research. Scientists, divorced from the role of actor, simply describe the current situation; action researchers, compelled by their desire for improved actions, will be reluctant to deprive their students of the possible benefits of their developing insights. For this reason, interventions frequently come to the surface throughout the process, perhaps even before the description phase has been completed.

In the scientific community, taking action on incomplete data is often considered inappropriate; for example, in pharmaceutical research, even the most promising cures are often held back until the experimental trials have been thoroughly analyzed. No similar regulations exist in action research, and if they did, enforcing them would be difficult, for teacher-researchers have strong commitments to their students that will always push them to act rather than wait for more data.

## Graphic Representation

The graphic representation is a technique that invites action researchers to move their thinking from the left side of the brain to the right. It provides an opportunity for teacher-researchers to actually draw a picture of the phenomena under study, including all the factors thought to be influencing the phenomena, as well as proposed solutions that have surfaced. The purpose of this technique

is to allow the relationships between factors, variables, and contexts to be looked at in a fresh light and then debated. The graphic representation technique has four steps:

**Step 1. Brainstorm all the relevant factors, variables, and contexts.** The workshop leader should supply each team with a large sheet of paper (minimum 2' X 3'), a pad of Post-it notes, pencils, and colored felt-tip markers. Then team members should be asked to list every relevant theme, idea, issue, factor, or variable that arose during their reflective interviews, their analytic discourses, or other discussions of the problem area. Each factor should be written on a separate Post-it note. For example, if the team had been discussing the drop in student self-esteem, the factors listed might be: grading practices, tracking, retention, parental support, teachers' collaborative action research, peer pressure, drug abuse, cooperative classrooms, competitive classrooms, school activities, socioeconomic status, and cliques.

**Step 2. Arrange relevant factors, variables, and contexts in relational order.** Once the team members have brainstormed and written all of the issues or factors they believe pertain to the problem, they gather around the paper and as a group attempt to arrange the issues on the Post-it notes in a logical pattern. As the team begins trying to illustrate their common understandings of the relationships between factors, the shortcomings of a verbal process often become apparent, and debates invariably ensue. For example, one person might say that he thinks school activities enhance students' self-esteem, while another person asserts the contrary, arguing that only students with high self-esteem participate in school activities. Suddenly, a group of people that seemed to be of one mind begins to realize that individual team members are seeing the issue in somewhat different ways.

It will take time for team members to reach consensus, usually at least an hour. The virtue of the Post-it notes is that no arrangement is permanent; emerging hypotheses and theories can easily be changed by simply moving the notes.

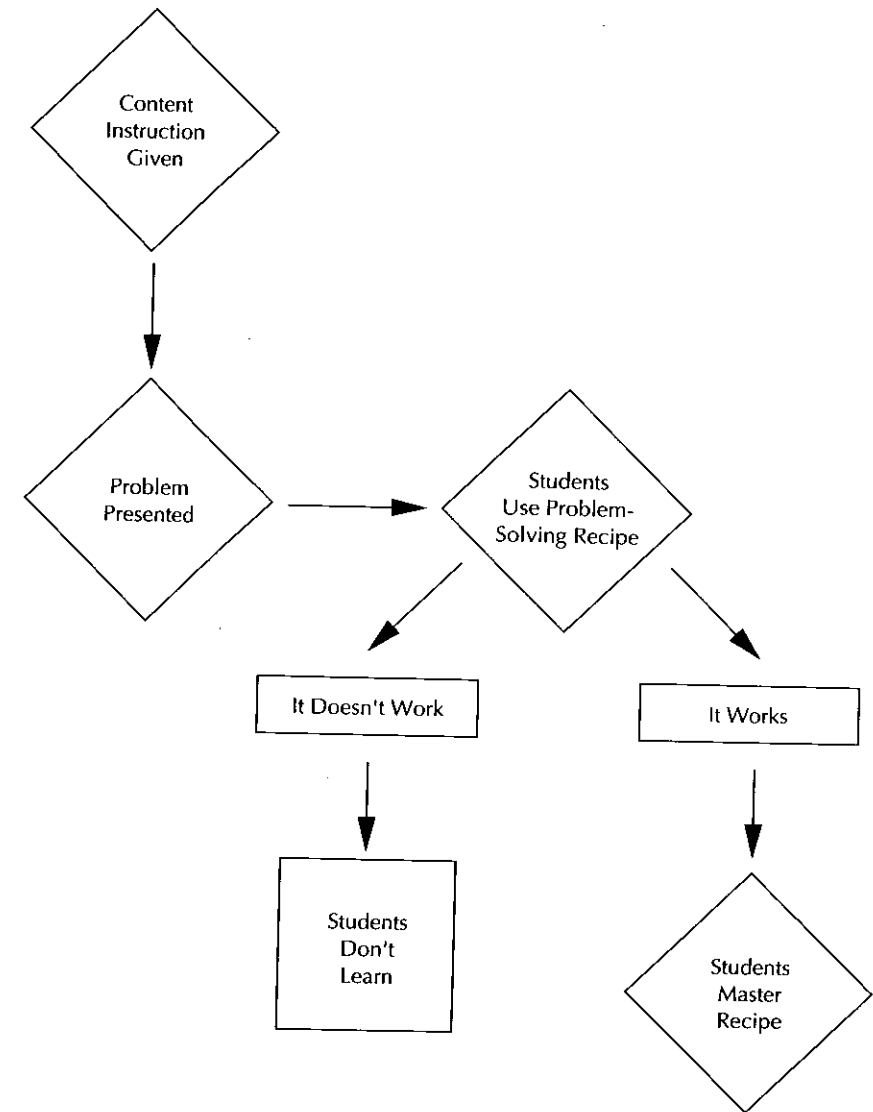
Once the team members have achieved some degree of consensus on the relationships between the issues, it's time to take out the colored markers and, using lines, arrows,

and symbols, draw the relationships. Figure 3.1 illustrates a portion of a graphic representation done by a high school team concerned about the paucity of problem-solving strategies being demonstrated by their students. Figure 3.2 shows the way the team thought they could go about solving the problem. Superimposing the second graphic representation on top of the first produces a new graphic showing teachers' complete view of the issue (see Figure 3.3).

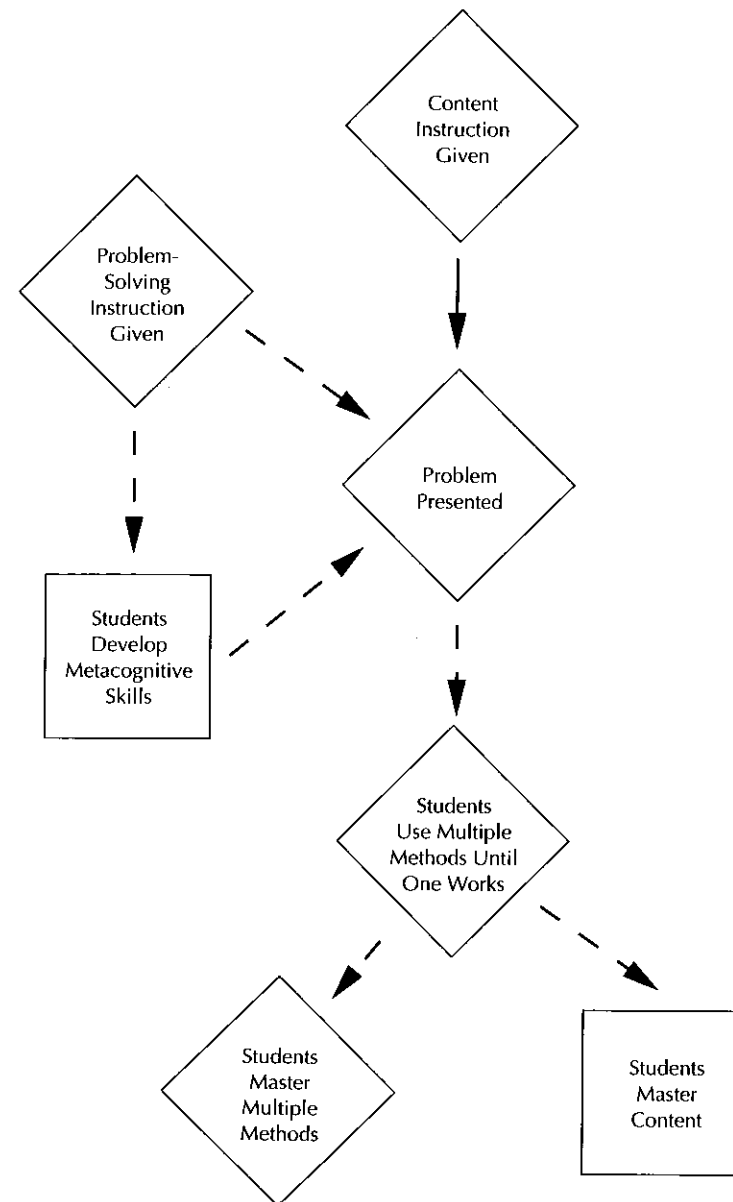
Once they have drawn a full picture, teachers usually feel some satisfaction because they have made clear their common understandings and acknowledged their shared viewpoints. Team members feel as though they are of one mind. But what if they are wrong? What if their presumed understanding of the issue is flawed? These are important questions because when teachers or other professionals embark on improvement projects based on hypotheses that may be wrong, the solutions they attempt are likely to fail, and failure reduces feelings of personal and professional efficacy. Most educators have too many memories of seductive innovations that were built on false assumptions and demanded a lot of time, enthusiasm, and commitment, yet brought only failure and deep and profound disillusionment. As a result, our schools are filled with teachers who often seem unwilling to try anything new because, as they say, "We've been through all this before." Encouraging teachers to come up with an accurate picture of the current situation as they currently understand it is a good way to overcome this attitude. It gives teachers themselves the responsibility for change. But this is only one step in the process.

**Step 3. Evaluate our knowledge base.** Up to this point, the collaborative action research process has been built from the knowledge, background, and perspective that team members brought to the instructional problem. The suggested activities simply helped the team clarify their previous understandings in all of their depth and breadth. It would be wrong to stop there, however, because few of us are prepared to say that we already have all the answers to the many truly perplexing educational problems. After all, if we did have the answers, the issues would hardly be perplexing!

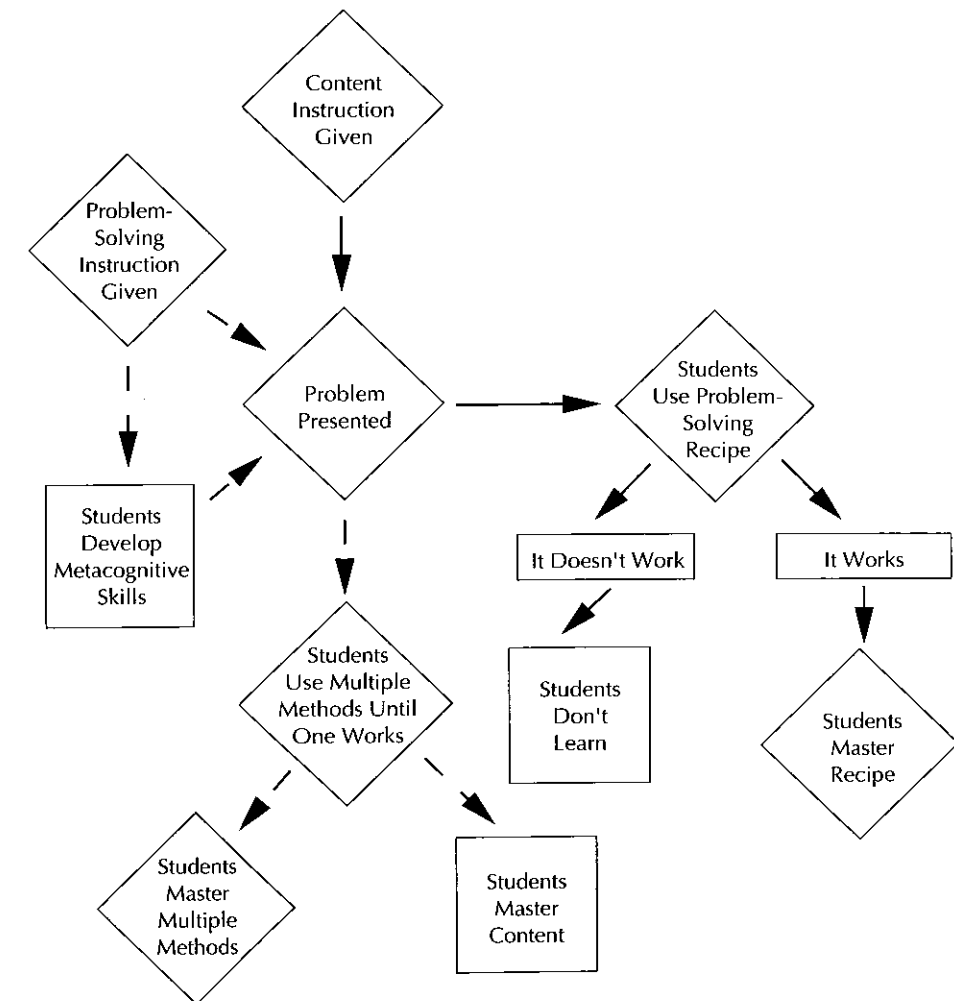
**Figure 3.1**  
**Graphic Representation of a Problem Area**



**Figure 3.2**  
**Graphic Representation of Proposed Intervention**



**Figure 3.3**  
**Graphic Reconstruction**



In the third step of the graphic representation, teachers analyze their picture with a critical eye and ask themselves, "Are we sure about this?" More specifically, they ask:

- Are the relationships between the variables or factors what we think they are?
- Are there other variables or issues that should be considered?
- Are we forgetting something?

First, the team looks at each line or arrow in the graphic representation, keeping in mind that each arrow is an assumption about a relationship. The team asks these questions about each presumed relationship:

- Do we know this to be true?
- What evidence leads us to that conclusion?
- What if our assumption is incorrect? How does it alter our understanding of the issue?

There will be many relationships on our graphic representation that we will know to be true. The basis for this knowledge could be prior research, professional experience, or research data we recently collected. The relationships we *know* to exist need not be the subject of any further investigation. For example, we might choose to accept as a given that there is a relationship between poor grades and the likelihood of dropping out of school, or a relationship between enjoying school and truancy. If, however, we find we have no empirical basis for supporting our current assumptions about an important relationship shown in our graphic representation, then we will want to collect some valid and reliable data to establish the actual existence of the relationship.

In fact, all the relationships we aren't fairly certain of should be investigated further unless the relationship itself is deemed irrelevant. For example, let's say we had inferred that possessing brown eyes was a factor that made a child less likely to drop out. We might well conclude that we had no evidence to support that assumption; yet we might also conclude that it wasn't worth trying to confirm or disconfirm, because altering children's eye color is impossible.

After completing a team analysis of all the lines and arrows in the graphic representation, it should be clear

where additional data are needed to make the graphic representation accurately reflect reality. It's important to use some kind of identifier to distinguish between the representations the team is sure of and those that require further investigation. For instance, I use dotted lines to show relationships about which I'm uncertain. If I'm confident of the relationship, I make the line solid.

**4. Surfacing the research questions.** Those relationships that the team concluded were meaningful, yet still need to be verified, become the focus of the research project. It is helpful to translate these relationships into questions. For example, the team might want to know:

- What student attributes contribute to student success with spelling?
- What contributes to making a parent conference worthwhile?
- Do all children benefit equally from cooperative learning in math?

Once the key research questions have been formed and agreed to by the team, only one small step remains before moving into the data collection process: writing the problem statement.

### The Problem Statement

In our investigations of the factors contributing to the successful completion of collaborative action research projects, the variable of "focus" was among the most significant. Teams who began their work with a clear idea of what they were studying and why they were studying it tended to find the motivation to complete their work. Conversely, the teams who lacked clarity on what they were about tended to lose interest in their collaborative work. Therefore, we recommend that collaborative action research teams complete the problem identification process by composing a problem statement of approximately 100 words that clearly and concisely answers the following questions:

1. Who is affected?
2. Who or what is suspected of causing the problem?

3. What kind of problem is it? (e.g., a problem with goals, skills, resources, time, etc.)
4. What is the goal for improvement?
5. What do we propose to do about it? (optional)

Figures 3.4 and 3.5 show sample problem statements that answer these questions.

**Figure 3.4**  
**Research Problem Statement**

- Students at Sunset High School appear to have a limited repertoire of learning strategies. [This answers questions 1 and 3].
- We suspect that this is a result of inadequate direct instruction in learning skills. [This answers question 2.]
- We want all Sunset students to be able to use and articulate multiple learning strategies when approaching academic tasks. [This answers question 4.]
- To accomplish this, we will infuse instruction in metacognition into each academic discipline. [This answers question 5.]

*Research Questions:*

1. Will instruction in metacognition improve students' ability to articulate and use multiple learning strategies with their school work?
2. What contributes to the effectiveness of content in teaching metacognition?
3. How does instruction in metacognition affect student attitudes and performance?

**Figure 3.5**  
**Research Problem Statement**

- Students at Highland Elementary School aren't seeing the connections between their school subjects. [This answers questions 1 and 3.]
- The action research group believes this is a result of our schedule and the way we teach the different subjects. [This answers question 2.]
- We want all our students to see the relevance of the school curriculum, to appreciate the relationship between the academic disciplines, and to be able to apply the skills learned in one subject to problem solving in another. [This answers question 4.]
- Therefore, we plan to integrate our instruction from science, math, language arts, and social studies into interdisciplinary units on society and technology. [This answers question 5.]

*Research Questions:*

1. What difficulties do students have translating skills from subject to subject?
2. Do students transfer skills more readily between subjects they enjoy?
3. What leads to students' enjoying a subject?
4. What is the difference between achievement in multidisciplinary classes and in single-subject classes?

## A Reality Check

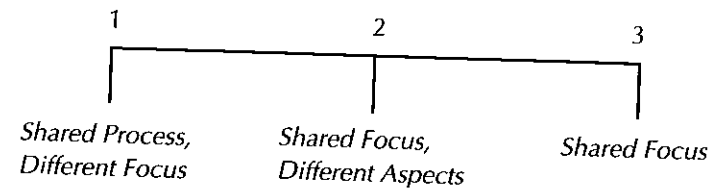
The next chapter will deal with the second component of the collaborative action research process, planning and carrying out data collection. Before embarking on those tasks (which are the heart of the research process), each team member should pause to answer these four questions:

**1. Is our research tied to what I have to do or want to do?** If the answer is no, change topics. As a busy teacher, you should commit to work only on what you consider a priority.

**2. Is our research focused?** In other words, are you clear on what this investigation is about and why it's being conducted? If not, stop until you get that clarity. You don't want to wander aimlessly.

**3. How involved do you want to be in this research project?** You need to be prepared to tell your partners what they can and cannot expect from you as the project proceeds.

**4. What will be the basis for team sharing?** Earlier in this book, we discussed the value of collaborative professional work. We all gain more, learn more, and are more professionally satisfied when we work with others. Nevertheless, the collaborative action research process described in this book is based on each professional working on personal priorities. What do you do when these two principles appear to be in conflict? The answer lies in the nature of your team and the issues the members want to investigate. Assume, for example, that you have joined a team of teachers who share some particular interest. For some reason, however, you find you don't enjoy working with the team. In this case, you would probably have trouble finding a basis for sharing, and should instead pursue individual action research or join another collegial group whose members seem to truly enjoy working together. People who enjoy working together can usually find some basis for sharing, though the level of sharing may be low or high, as shown on the following continuum.



A team that finds itself at point 3 on the continuum is one where everyone is interested in the same issues and has decided to pursue their common interests by engaging in a single action research project. Examples might include a team of English teachers examining the effects of peer editing on the quality of student writing, or a 4th grade team investigating the effects of a multidisciplinary unit.

Another team might find itself at point 2. Here everyone is interested in the same general focus area, but each member finds that she has a passion for different aspects of that focus. An example could be the school in which all ten members of an action research team are interested in the multi-age grouping process being introduced at the school; however, each teacher is intrigued by a different aspect or issue related to multi-age grouping. Another example might be the middle school faculty that wants to investigate cooperative learning, although one member wants to investigate its effects on self-esteem while another wants to find out how it affects teacher preparation time and stress, and still another wants to see how it might affect students' attainment of thinking skills. These teams would do well to conduct multiple projects and meet regularly to share what they are learning about their common interest areas.

Finally, it is possible that a team will find itself at point 1. Here everyone has caught the action research bug and is eager to pursue an inquiry, but all the focuses are idiosyncratic. Diverse focuses should not be cause for concern. Many such teams have constituted themselves as action research support groups that meet every two weeks simply to share what they have been learning. What these teams have in common is a commitment to the action research process, and what they receive from each other is procedural help, as well as the active listening of caring and concerned peers.

As a result of reflecting on a problem area and analyzing what they know about it, team members should be able to identify gaps in their knowledge base. The next step is to fill in those gaps.